python™

BUZZWORD COMPLIANCE

Buzzword Compliance

- 3 Slides Per Buzzword
- High Signal To Noise
- Breadth Over Depth
- About EXPLORING Python

Buzzword Compliance

The Python Language

Library Building Blocks
(Games & Graphics)

Big Honking Frameworks

(Web Application Frameworks)

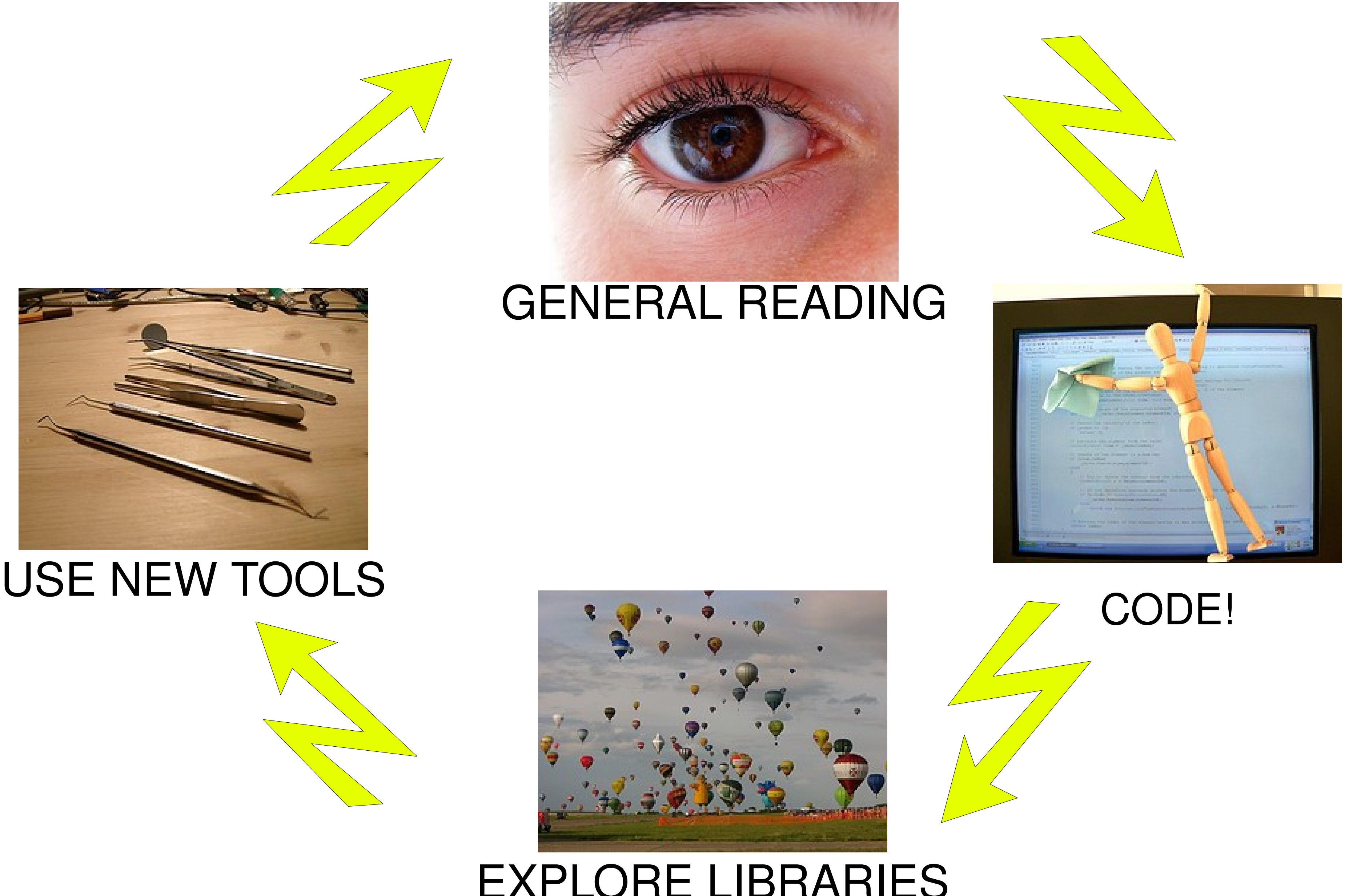
- All are part of Python

LEARNING
PYTHON

Learning Python

- The Quick Reference Sheet
- Python Tutorial
- Python Challenge
- ✯ A Cycle of Learning

Learning Python



GENERAL READING

CODE!

EXPLORE LIBRARIES

USE NEW TOOLS

[ ]

LIST
COMPREHENSIONS

List Comprehensions

- A Cool Idiom of Python
- Enables Conciseness
- Obviates ***map***, ***filter***, ***reduce***
- Unrolls into Simple Loops

List Comprehensions

```
lost = sum([c.billed - c.paid for c
 in customers if c.is_deadbeat()])
```

```
l = [ ]
for c in customers:
    if c.is_deadbeat():
        l.append(c.billed - c.paid)
lost = sum(l)
```

EXECUTING MODULES

Executing Modules

- Import runs code, once.
- ***def*** is just a statement
- Use to precalculate stuff
- ✩ Python just runs scripts in namespaces

Executing Modules

```
class C:
   print “Hello from C”
   def help_make_table(size):
      ...
   c_table = help_make_table(64)
   del help_make_table
```

@ DECORATORS

Decorators

- Wraps methods with new functionality
- Useful for logging, security, etc.
- Clean Syntax for use
- Unrolls to simple code

Decorators

```
from decorator import decorator
@decorator
def trace(f, *args, **kw):
    print "call %s with args %s, %s"
 % (f.func_name, args, kw)
    return f(*args, **kw)

@trace
def buggy_function(a, b, c)
```

METACLASSES

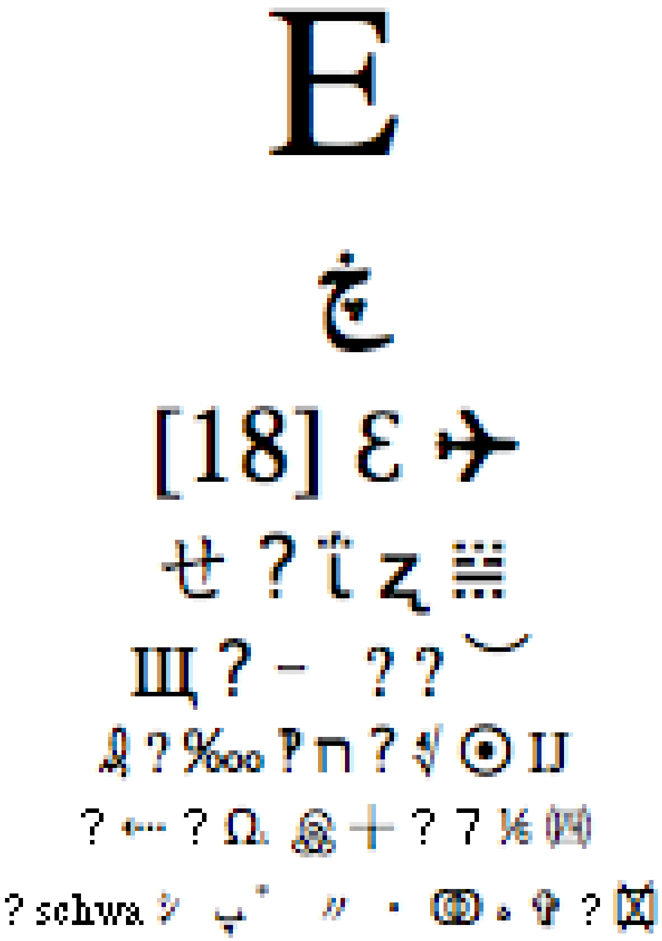
Metaclasses

- The superclass '***type***' of classes
- Changes functionality of Python
- Adds complexity to entire project
- Shiny things can be traps

Metaclasses

```
class Midnight_Hack(type):
  def __new__(cls, name, bases, ats):
    for a,v in ats.items():
          # post-process ats...
    return type.__new__(cls, name,
                        bases,ats)

class Innocent_PEP_3115(P3000):
    __metaclass__ = Midnight_Hack
```



UNICODE

Unicode

- Represents **every** human language
- Breaks all ASCII rules
- Designed by Committee
- Real world adds constraints

Unicode

UNICODE: Universal Character Set; The Unicode Standard book; character encodings; enumerate properties; text normalization; decomposition; collation; bidirectional display order; Unicode Consortium; Ligatures; orthographic rules; sidebearing; macron; WGL-4; Multilingual European Subsets MES-1/2/3a/3b; replacement character; LastResort font; UTF-8; codec.open(); ISO 14755; C0 and C1 control codes; Han unification versus TRON; GB-18030; Binary Ordered Compression; Basic Multilingual Plane; UnicodeDecoderError on str.encode() contrasted with UnicodeEncoderError on str.decode(); endianness external metadata; PunyCode; graphemes; syllabaries; ConScript Unicode Registry; Universal Transformation Format versus Universal Character Set mappings; Private Use Area; Hangul Jamo; radicals

- Just “make peace” with Unicode

PYTHON 3000

Python 3000

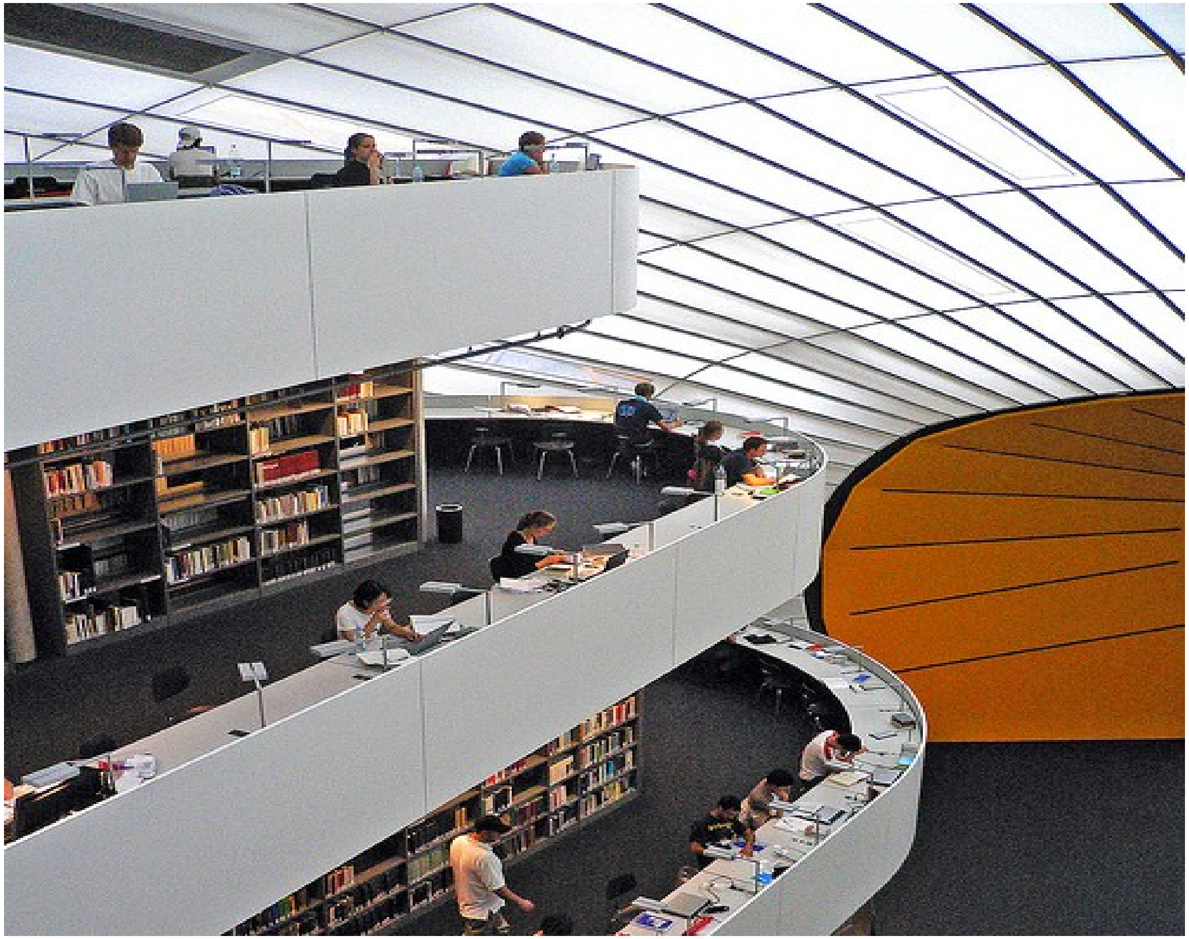
- Incremental not Revolutionary
- Need to read old code
- Available as Alpha (3.02a)
- Guido exercises restraint

Python 3000

Function Annotations PEP-3107

```
def create_map(x: “in map units”,
    y: “in map units”,
    walls: “2D boolean array (x by y)
 with True meaning a wall”,
    pixel_width: “number of pixels per
 map unit”) -> “Graphical PNG map”


def random_map(x: Coord, y: Coord) ->
 Image:
```



Libraries

Python Imaging Library (PIL)

Python Imaging Library (PIL)

- Reads and Writes Image Formats
- Rock solid with 250 formats
- Interactive image manipulation
- Not all 'batteries included'.

Python Imaging Library

```
import Image
im = Image.open(“cool.jpg”)
im = im.resize(128,128).rotate(90)
im.save(“cool.png”)

(r,g,b) = im.split()
(x,y) = im.size
im.show()
```

pygame

PyGame

- Easy 2D Game Engine
- Aggressively cross platform
- Continuous contests
- ✯ Sometimes static != static

FRINKIAC-7 PYBOMBER

next:
new: 2
score: 000001860
next:
new: 0
score: 000004470

soya

Soya 3D

- Full 3D Game Engine (almost)
- Uses Pyrex for linking modules
- Slow and forked with PySoy
- Avoid Python centric bias

OGRE

Python OGRE

- Game Engine From Wrappings
- Uses Py++ to make Python bindings
- OGRE is popular
- ✯ Sometimes a “Mash-up” is best

Python OGRE

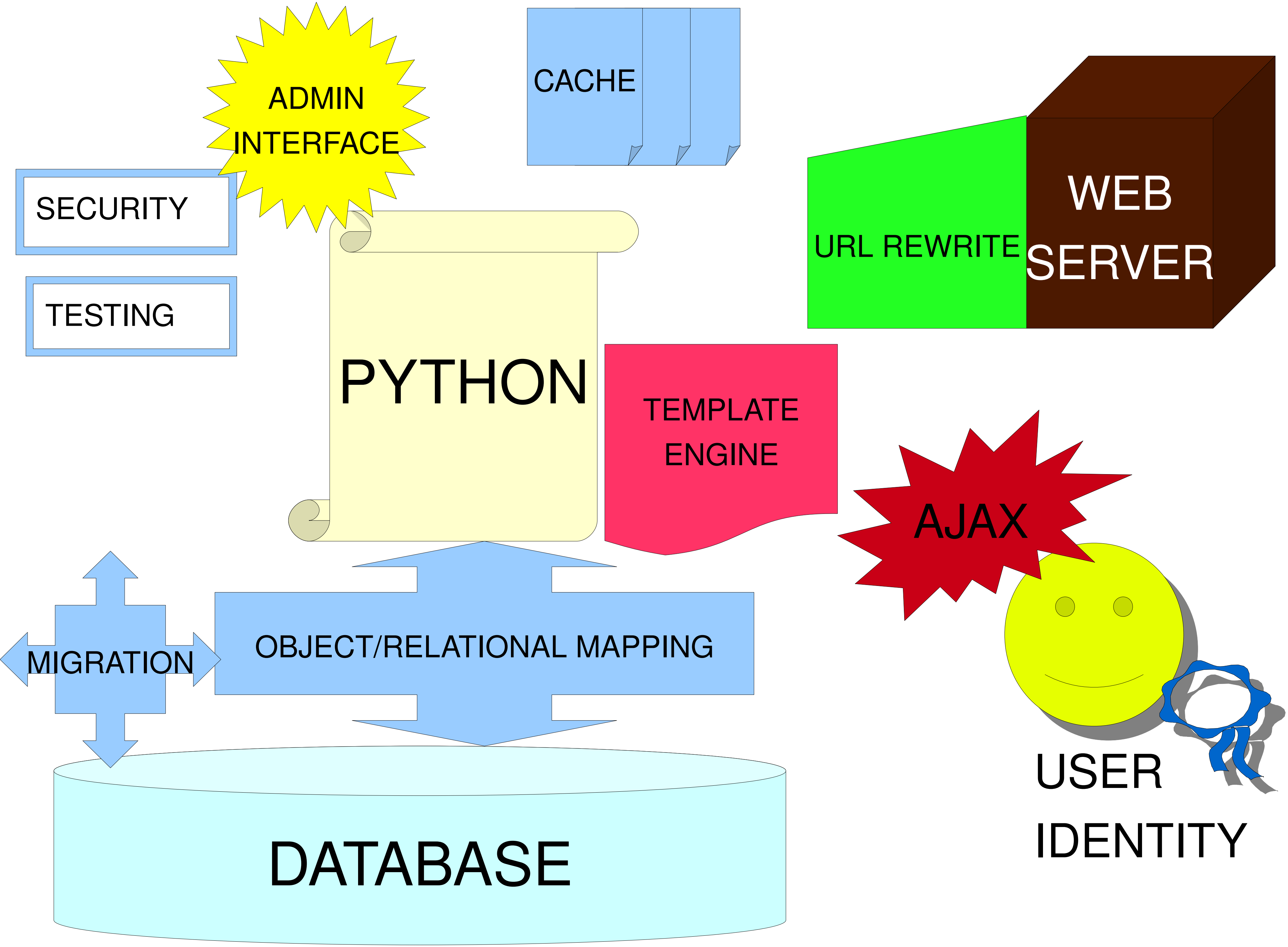
- Rendering (OGRE 3d + Forests/sky/terrain)
- I/O (Object Oriented Input System or OIS)
- GUI (Crazy Eddie GUI & Navi & BetaGUI)
- Sound (OgreAL & Plib + Noise)
- Physics (NxOgre / PhysX, OgreODE / ODE, OgreNewt / Newton, OgreBullet / Bullet)
- Networking (Plib)
- Video (Theora, OgreDshow, ffmpeg)

Frameworks

Web Application Frameworks

Web Application Servers

- Deploy Web Applications
- Pile of Parts
- Dozens of Choices
- Indecision Breeds Religious Arguments



ADMIN INTERFACE

CACHE

SECURITY

TESTING

URL REWRITE

WEB SERVER

PYTHON

TEMPLATE ENGINE

AJAX

MIGRATION

OBJECT/RELATIONAL MAPPING

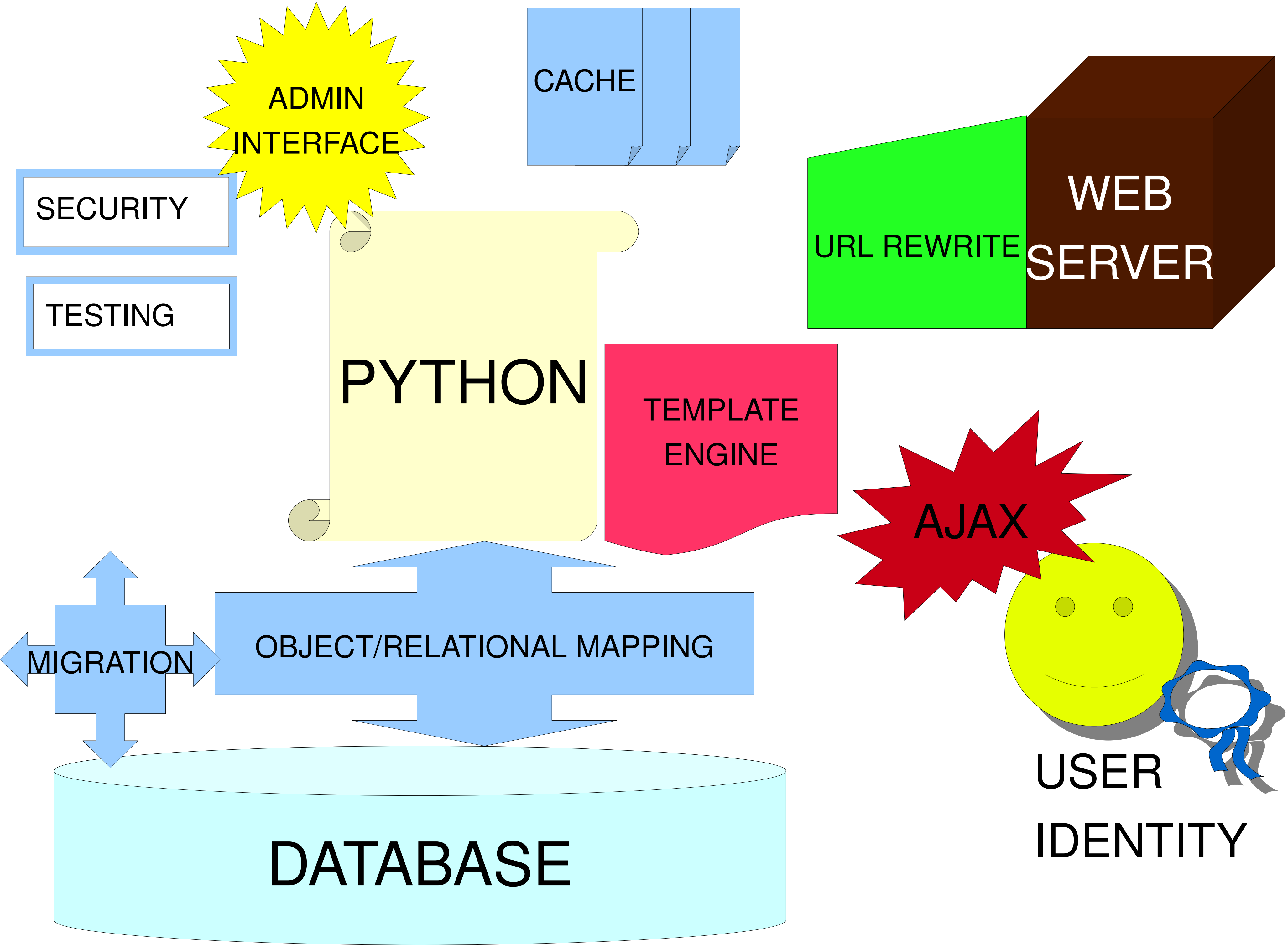
USER IDENTITY

DATABASE

ZOPE

Zope

- Scalable Since 1995
- Full web based interface
- Zope 2 and Zope 3
- Success is its own reward



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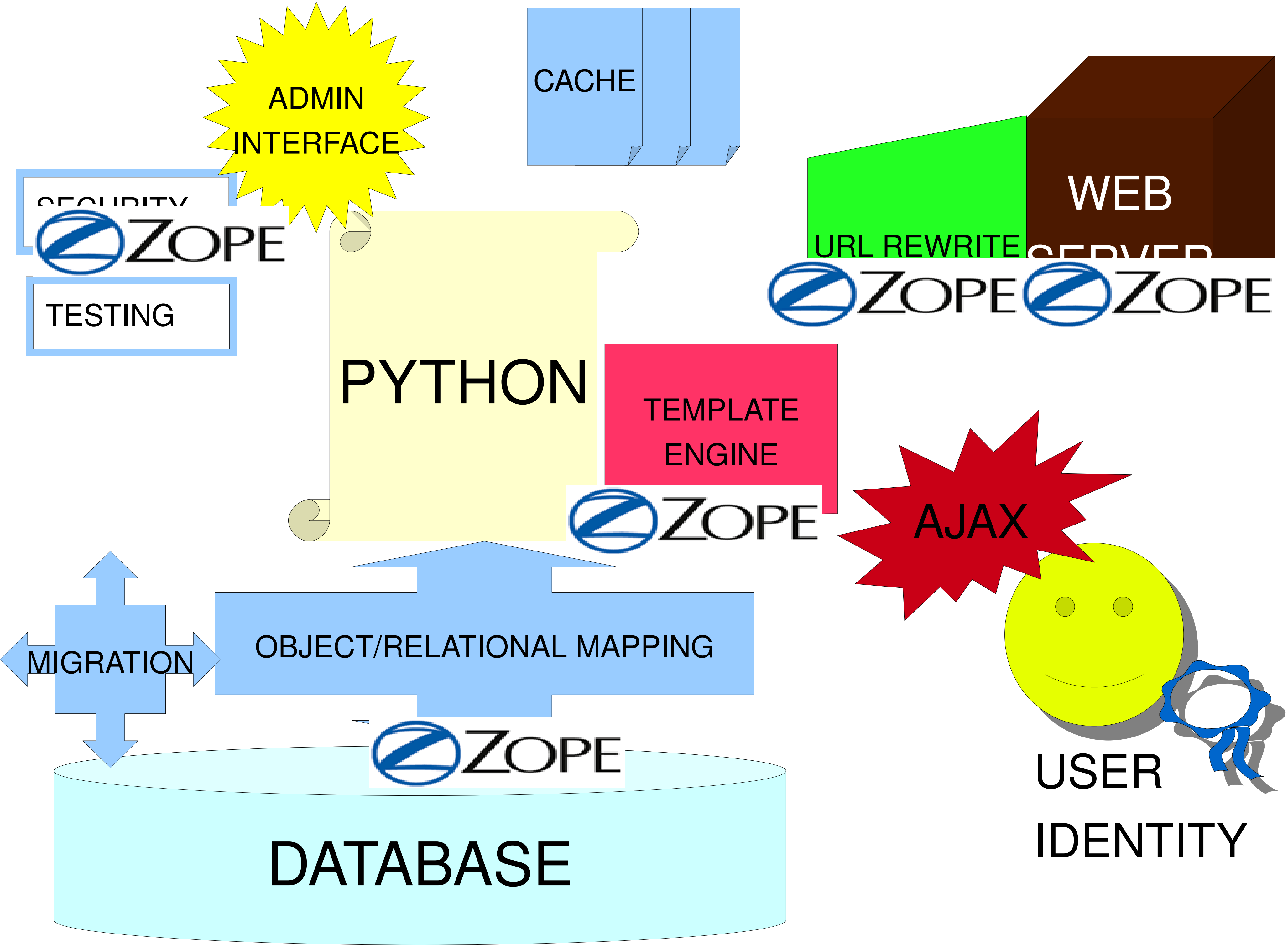

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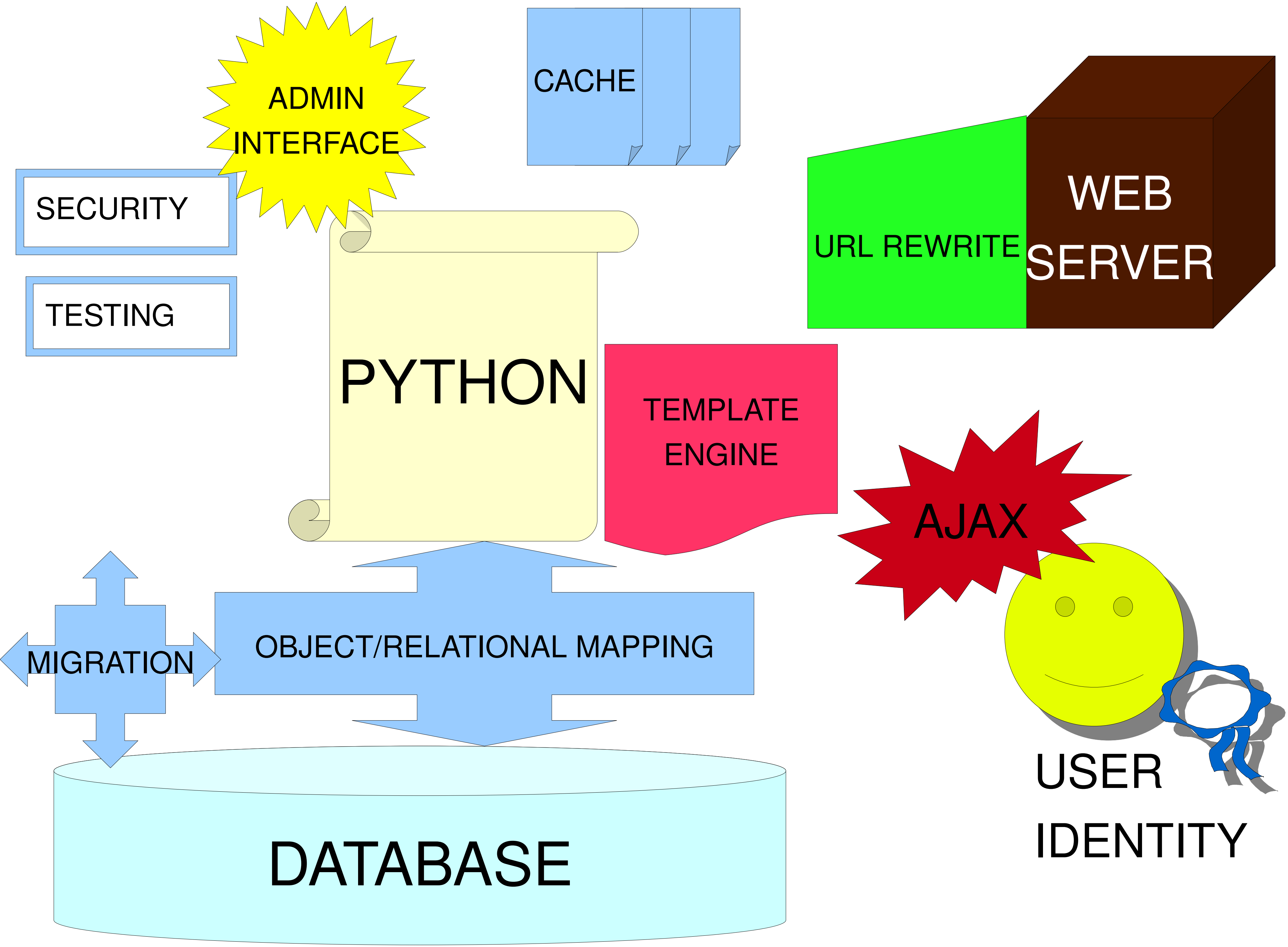
django

Django

- Emphasis on *Don't Repeat Yourself* (***DRY***)
- Interactive console
- Unfortunate naming, e.g., MVC

☆ Confusion Comes From Names



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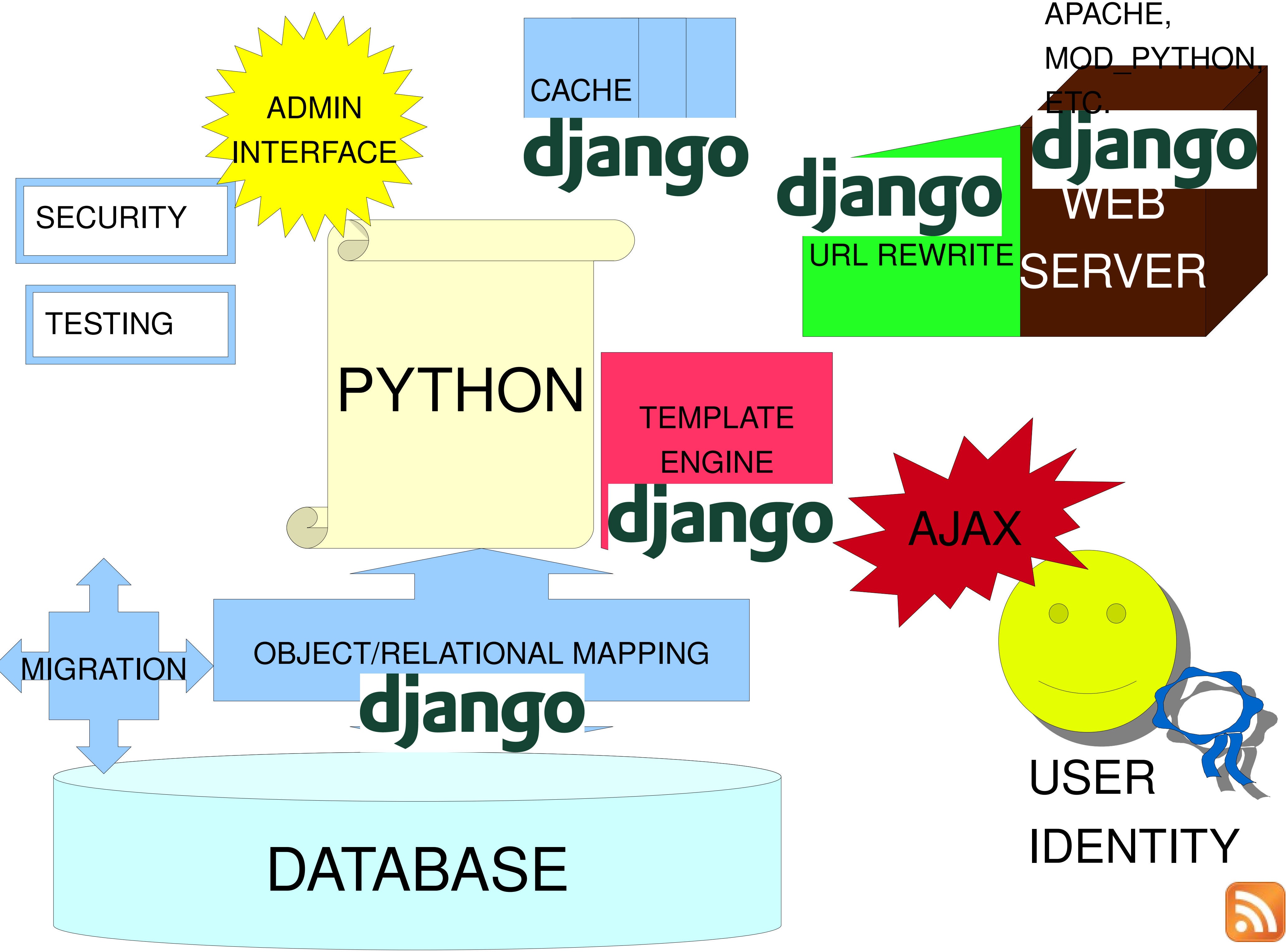

ADMIN INTERFACE

CACHE

django

APACHE,
MOD_PYTHON,
ETC.

django

WEB SERVER

django

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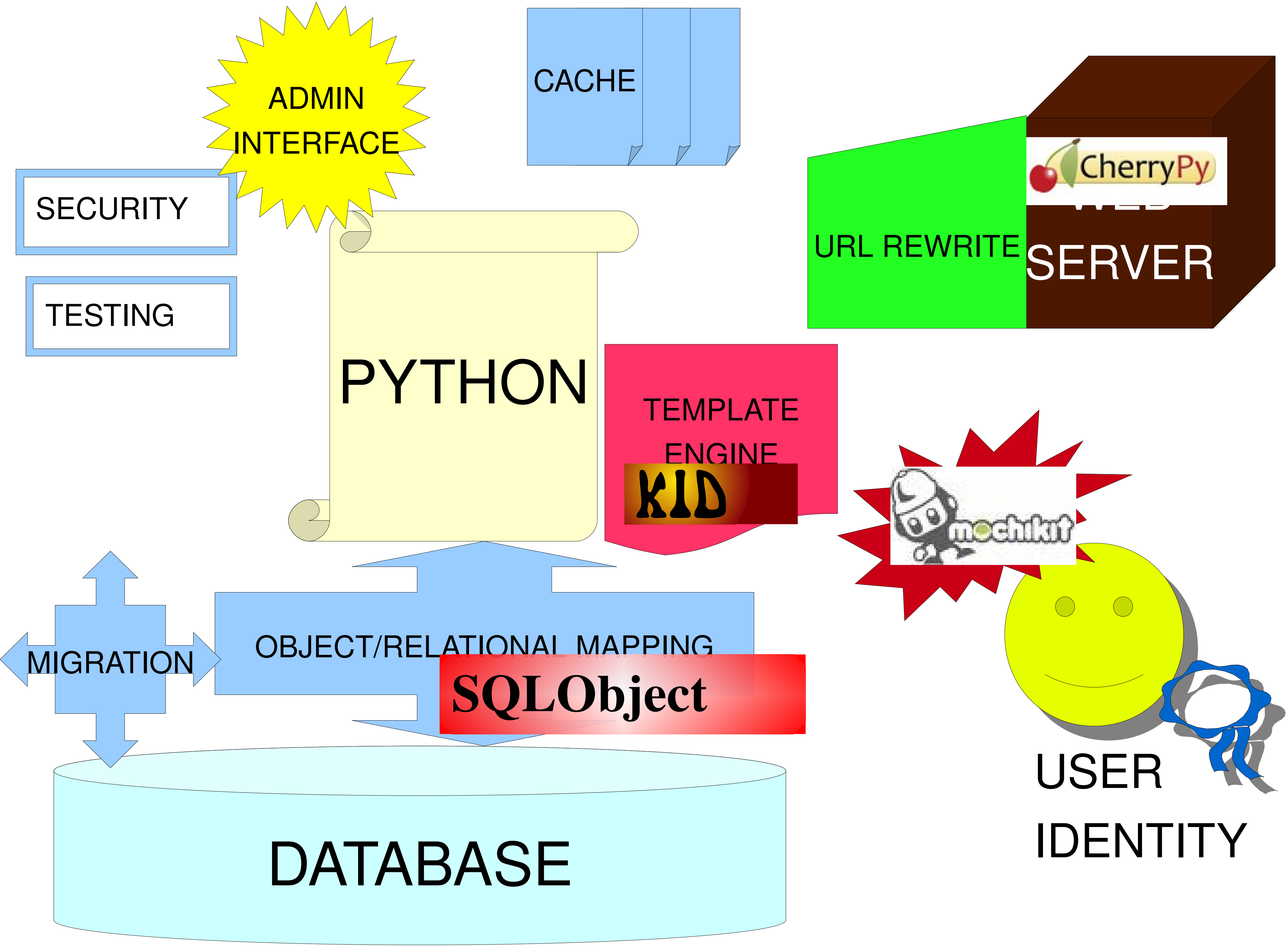
TURBO
GEARS

TurboGears

- Assembled from more parts
- More screencasts
- Still fairly young
- Outreach Makes People Happy



ADMIN INTERFACE

CACHE

CherryPy

WEB SERVER

URL REWRITE

SECURITY

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PYTHON

TEMPLATE ENGINE

KID

mochikit

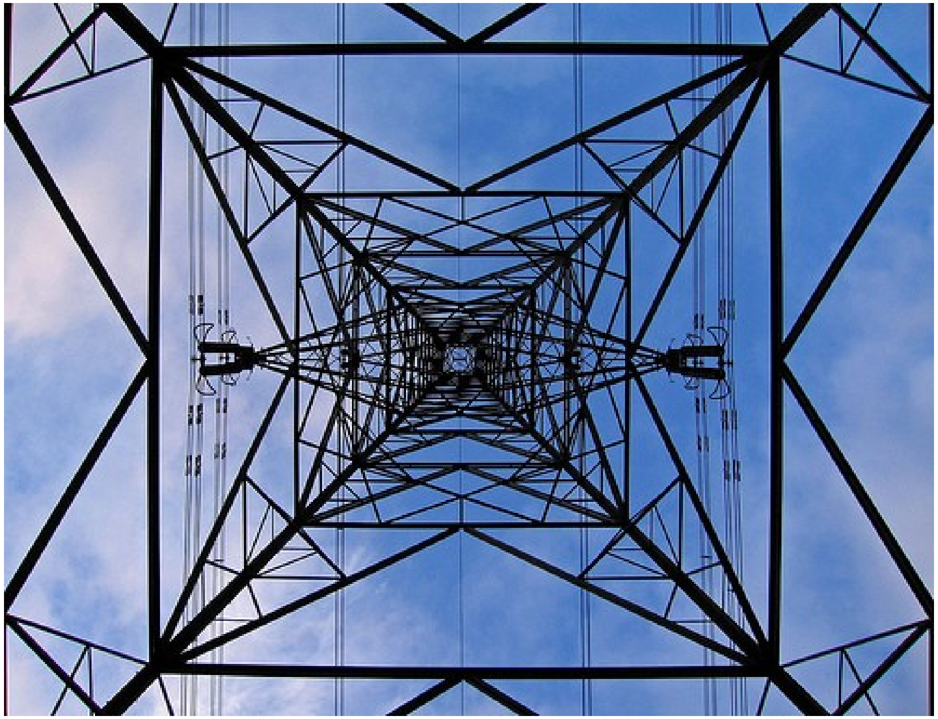
MIGRATION

OBJECT/RELATIONAL MAPPING

SQLObject

DATABASE

USER IDENTITY



Pylons

Pylons

- Reimplements Ruby on Rails
- Lots of Code Generators
- Flexibly Assembled with Python Paste

★ Flexibility has its limits

Content Management Systems

Content Management Systems

- Web Site Publishing
- On top of Web Application Servers
- One Serious Choice

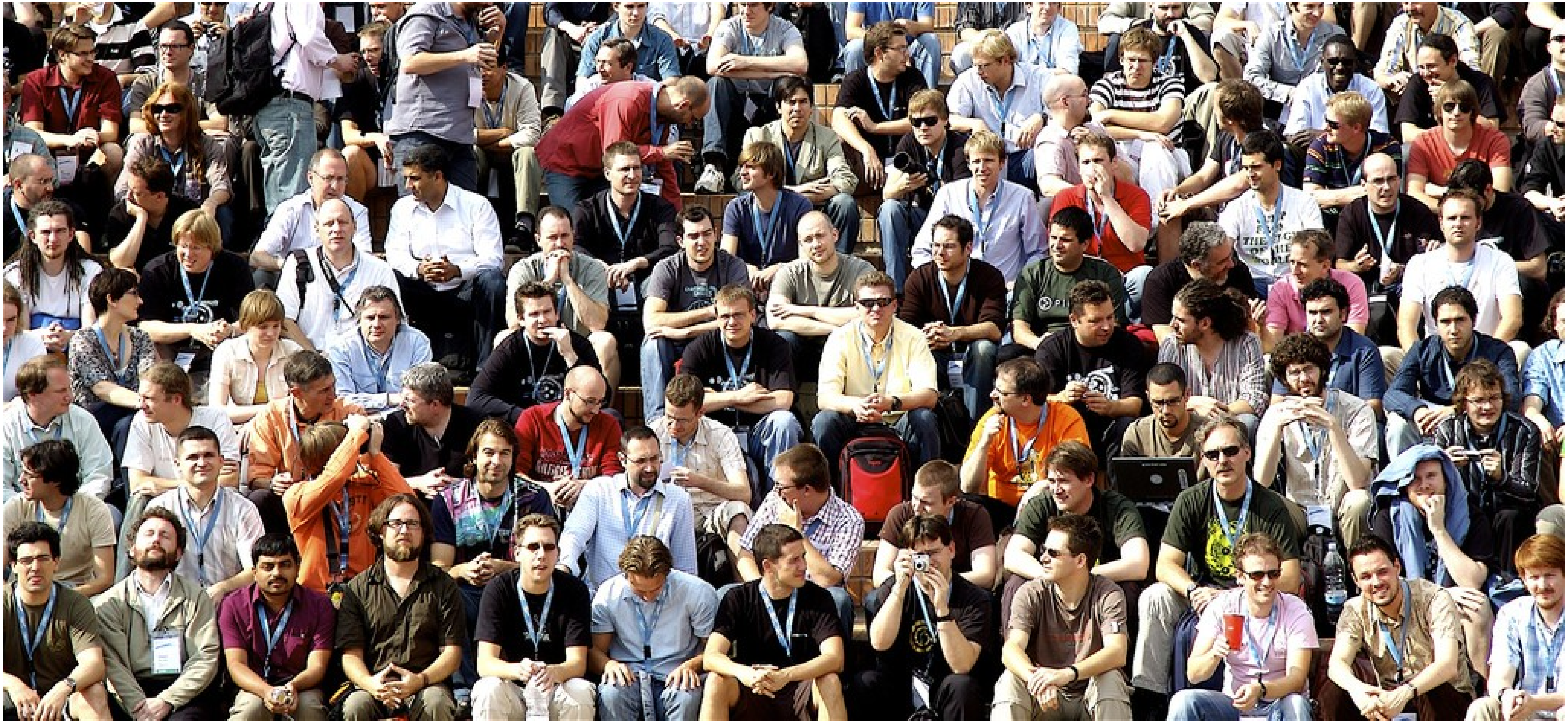
☆ Great When It Just Works!

Plone

Plone

- Built on Zope
- Strong Support Base
- Archetypes and Extendable Content Types
- ★ Right Design Helps a Lot

Plone



Finished!

Summary

- Keep Exploring Python
- Wikipedia is Your Friend
- Ignore Version Numbers
- Learn until you are dead and buried.

Summary

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